

CLAIMS

1. A rotary fluid machine comprising

a rotation mechanism (20) including:

5 a cylinder (21) having an annular cylinder chamber (50);

an annular piston (22) which is contained in the cylinder chamber (50) to be eccentric to the cylinder (21) and divides the cylinder chamber (50) into an outer working chamber (51) and an inner working chamber (52); and

10 a blade (23) which is arranged in the cylinder chamber (50) to divide each of the working chambers into a high pressure region and a low pressure region, the cylinder (21) and the piston (22) making relative rotations, wherein

the width T1 of the cylinder chamber (50) is varied along the circumference of the cylinder chamber (50) such that the gap between the wall surface of the cylinder (21) and the wall surface of the piston (22) is kept to a predetermined value during the rotations.

15 2. A rotary fluid machine comprising

a rotation mechanism (20) including:

a cylinder (21) having an annular cylinder chamber (50);

20 an annular piston (22) which is contained in the cylinder chamber (50) to be eccentric to the cylinder (21) and divides the cylinder chamber (50) into an outer working chamber (51) and an inner working chamber (52); and

a blade (23) which is arranged in the cylinder chamber (50) to divide each of the working chambers into a high pressure region and a low pressure region, the cylinder (21) and the piston (22) making relative rotations without spinning by themselves, wherein

25 the width T2 of the piston (22) is varied along the circumference of the piston (22) such that the gap between the wall surface of the cylinder (21) and the wall surface of the piston (22) is kept to a predetermined value during the rotations.

3. The rotary fluid machine according to claim 2, wherein
the width **T1** of the cylinder chamber (**50**) is varied along the circumference of the
cylinder chamber (**50**) such that the gap between the wall surface of the cylinder (**21**) and
5 the wall surface of the piston (**22**) is kept to a predetermined value during the rotations.

4. The rotary fluid machine according to claim 1 or 3, wherein
regarding the center line of the blade (**23**) as a starting point of the circumference
of the cylinder chamber (**50**), the width **T1** of part of the cylinder chamber (**50**) ranging
10 from the starting point to a point at a rotation angle of 180° from the starting point is large
and the width **T1** of the other part of the cylinder chamber (**50**) ranging from the 180° point
to a point at a rotation angle less than 360° from the starting point is small.

5. The rotary fluid machine according to claim 4, wherein
15 the center of the inner circumference of the cylinder chamber (**50**) is deviated from
the center of the outer circumference of the cylinder chamber (**50**) when viewed in plan.

6. The rotary fluid machine according to claim 1 or 3, wherein
the cylinder chamber (**50**) is divided into four regions along the circumference
20 thereof such that the cylinder chamber (**50**) has wide regions (**Z1**, **Z3**) and narrow regions
(**Z2**, **Z4**) formed in a continuous and alternate manner.

7. The rotary fluid machine according to claim 2 or 3, wherein
the piston (**22**) and the blade (**23**) make relative swings at a predetermined swing
25 center and
regarding the swing center of the blade (**23**) and the piston (**22**) as a starting point
of the circumference of the piston (**22**), the width **T2** of part of the piston (**22**) ranging

from the starting point to a point at a rotation angle of 180° from the starting point is small and the width T2 of the other part of the piston (22) ranging from the 180° point to a point at a rotation angle of 360° from the starting point is large.

5 8. The rotary fluid machine according to claim 7, wherein
the center of the inner circumference of the piston (22) is deviated from the center
of the outer circumference of the piston (22) when viewed in plan.

 9. The rotary fluid machine according to claim 2 or 3, wherein
10 the piston (22) and the blade (23) make relative swings at a predetermined swing
center and

the piston (22) is divided into four regions along the circumference thereof such
that the piston (22) has narrow regions (W1, W3) and wide regions (W2, W4) formed in a
continuous and alternate manner.

15 10. The rotary fluid machine according to claim 1, wherein
part of the annular piston (22) of the rotation mechanism (20) is cut off such that
the piston (22) is C-shaped,

the blade (23) of the rotation mechanism (20) extends from the inner wall surface
20 to the outer wall surface of the cylinder chamber (50) and passes through the cut-off
portion of the piston (22) and

a swing bushing is provided in the cut-off portion of the piston (22) to contact the
piston (22) and the blade (23) via the surfaces thereof such that the blade (23) freely
reciprocates and the blade (23) and the piston (22) make relative swings.